

THE RELATIONSHIP OF CERTAIN PSYCHOLOGICAL TEST SCORES TO SUBSEQUENT RATINGS OF MISSIONARY FIELD SUCCESS

By CLARENCE R. THAYER, A.B., S.T.B., TH.M., PH.D.

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I. INTRODUCTION

A. Problem and Purpose

The Foreign Missions Conference of North America, through its Committee on Missionary Personnel, in the years from 1931 to 1933 inclusive, gave psychological tests to 200 missionary appointees of various denominations. To each appointee were given tests of intelligence, neurotic tendency, dominance, interests, and social attitudes. This was supplemented in the first year of the testing by a candidate secretary's rating and in the other two years by a test of self-sufficiency.

The problem of this dissertation is to determine what relationships, if any, exist between the aforesaid psychological test scores made by these 200 missionary appointees prior to their terms of service, and ratings of field success provided subsequently by their associates and superiors. Basically, then, the study purposes to explore the possibility of predicting missionary success by means of psychological tests taken by a candidate before he embarks on his missionary career.

B. A Previous Study of the Problem

Rosemary Jessen used some of the data of this problem as the basis of a master's thesis presented to the Presbyterian College of Christian Education, Chicago, in June, 1939. Her thesis was entitled *A Comparison of the Results of Objective Tests Administered Before Sailing to the 1931, 1932, and 1933 Presbyterian Foreign Missionary Appointees with Their Subsequent Field Achievement Records*. As the title indicates, the study was delimited to the Presbyterian appointees involved in the original testing and, as a matter of fact, included less than half of them. Jessen made 17 comparisons between test scores and sections of a rating scale which she used as a criterion, of which she gives actual rank-difference correlation coefficients for only six. She used no measure of overall success nor did she attempt to set up any predictive test battery. Although hers was admittedly only an

exploratory study, she did discover some interesting relationships. Her results suggested the high desirability of a broader and more intensive study of the data, and the use of techniques impossible in such a short study.

C. Nature and Treatment of the Data

The basic data of this dissertation were the pre-service psychological test scores and the post-service ratings by associates and/or superiors.

The psychological test scores and subscores for the various individuals are found in a series of three mimeographed reports released in the successive years of the testing by the Foreign Missions Conference.

Data relative to the post-service ratings were discovered for 69 Presbyterian testees in an elaborate rating instrument known as the pre-furlough questionnaire. Used by the Board of Foreign Missions of the Presbyterian Church (U. S. A.) as part of its administrative procedure for each missionary who had completed his first term of service, it was carefully compiled from the combined ratings of from 12 to 35 fellow-missionaries and was used as the basis for a judgment of the missionary's effectiveness in reappointment and reassignment. For 38 Presbyterians for whom no such instrument was available, and for 38 missionaries of other boards for whom no like instrument proved available, letter ratings of overall success together with other pertinent qualitative information were obtained from home office personnel within recent months.

Treatment of these data consisted of a comparison of the two sets of data with each other, with a view to discovering the nature and strength of the relationships. For this purpose comparisons of mean scores, calculations of coefficients of correlation, and cut-off scores were the main statistical devices used.

D. Delimitations

This study was delimited to the missionaries who took psychological tests at Hartford in 1931-1933, under the sponsorship of the Foreign Missions Conference, even though scores and post-service ratings proved available for some missionaries not then and there tested. It was further delimited by the exclusion of other data used in selection of the 200 missionaries such as references, school grades, and application blanks. Also ruled out of consideration was any effort to determine what qualities were most essential to missionary success, although the data assembled for this study presumably contained at least a partial answer to that question.

II. THE RELATIONSHIP BETWEEN THE TEST SCORES AND RATINGS OF SPECIFIC QUALITIES

As hitherto explained, a detailed rating-sheet was available for 69 Presbyterian testees. Comparison was made between test scores and

ratings of each of these individuals on practically all of the specific qualities, or segments of success, contained in the pre-furlough questionnaire. As each test was considered the question was raised as to whether, and to what extent, those who scored high in that test also scored high (or low) in the various specific qualities. More specifically, the mean rating on a given trait earned by the top 27 per cent of the scorers on a test was compared with the mean rating of the bottom 27 per cent of the scorers upon the same test. The significance of the difference in these mean scores was expressed in terms of the critical ratio of the difference, and the critical ratio was evaluated in terms of the level of confidence which it reached. Relationships so discovered were graded as being strong, medium, or weak.

It was discovered that tests of interest showed strong relationships with rated spiritual qualities. Tests of neurotic tendency showed strong relationships with lack of emotional control, oversensitiveness, and somewhat weaker relationships with a number of other qualities generally considered neurotic. Tests of dominance showed relationships with cordiality, friendliness, and other outgoing traits. A test of intelligence showed a strong relationship with business sense and promise of continued language study. The test of social attitudes revealed only weak relationships with such qualities as open-mindedness, leadership, and sense of humor. Candidate secretaries' ratings (pre-service, and used in 1931 only) seemed to have negative relationships with many desirable qualities, especially in the case of the male testees. On the whole, the various tests served to predict reasonably well those phases of field success and/or adjustment with which the nature and the purpose of the test seemed to relate. Many specific qualities or segments of success were found to be related, to some degree, to some one or more test scores. Because some qualities were related to two or more test scores it proved feasible to predict with some degree of success by means of test scores the relative rank of various testees in display of certain qualities upon the field.

III. THE RELATIONSHIP OF THE TEST SCORES TO THE PRIMARY MEASURE OF OVERALL SUCCESS

For purposes of this dissertation and in connection with the 69 Presbyterian testees for whom the detailed primary criterion proved available, overall success became the numerical average of all ratings received on all qualities from all raters. This numerical expression of the degree of field success was used as the criterion in the correlation arrays which were set up to determine the value of each test as a predictor of overall success.

The best single predictor was found to be the measure of vocational interest used on the 1931 group of testees, which correlated .48 with field success for the 23 testees of that year, with no attention given to the sex of the testees. The religious and social sections of the multiphasic interest test used in the latter two years correlated .25 and .16, respectively, with the

criterion for the 43 testees of the 1932-1933 group. The intelligence test correlated .15 and .22 with field success for the 1931 and 1932-1933 groups, respectively. Candidate secretaries' ratings correlated negatively with overall success in the 1931 group, in which alone they were used. Tests of neurotic tendency showed a negative correlation of .29 in the 1932-1933 group while in the 1931 group separate norms for the two sexes made the correlation of .04 almost meaningless. The test of social attitudes, used throughout the testing period, showed correlations with field success of .12 and .15 in 1931 and in 1932-1933, respectively. The tests of dominance showed a correlation of .21 in the 1932-1933 group and a negative correlation of .19 in the 1931 group, although in view of the separate norms and forms for the latter, the figure was rather meaningless. The test of self-sufficiency showed a correlations of .14 with field success for the 1932-1933 group, in which alone it was used.

When the groups were broken down into their sex components certain interesting facts emerged. The tests of intelligence, of social attitudes, and of social interest proved far more important in predicting success among women and seemed to have little value for men. Conversely, tests of dominance and self-sufficiency seemed to be highly important for men and to possess little or no value in predicting the field success of women. Tests of neurotic tendency proved highly important in predicting failure among men, but were of much lesser, if not questionable, importance in predicting it among women. Tests of interest, vocational or religious, seemed to have high value for predicting success in either sex.

It was found, when the attempt was made to construct a battery of maximum predictive power for the 1932-1933 group only, that three tests of intelligence, religious interest, and freedom from neurotic tendency, properly weighted, correlated .53 with field success. This correlation coefficient deserved better than a one per cent level of confidence. When tests of dominance, self-sufficiency, social attitudes, and social interest were added, the correlation rose to .59 but the level of confidence receded somewhat from the one per cent level.

It was also learned that the use of cut-off scores with this primary criterion group, especially those based on the tests of intelligence, of social and religious interests, and of neurotic tendency would have operated to eliminate poorer testees, while the use of such cut-off procedures based on candidate secretaries' ratings would have eliminated better testees.

IV. THE RELATIONSHIP OF THE TEST SCORES TO THE SECONDARY MEASURE OF OVERALL SUCCESS

For 76 of the Hartford testees, half of them Presbyterians, no pre-furlough questionnaire was available, but only letter ratings of success and certain other pertinent information. The method used for the comparison of these letter ratings with test scores was the comparison of mean test

scores of the various grade level groups. The question was raised, for example, as to whether the testees who rated "A" in their field success ratings made significantly higher test scores as a group than did those who rated lower on field success. On the test of intelligence the results were decisive-higher test scores being significantly related to higher field ratings. The test of social attitudes showed a mildly significant but negative relationship to field success ratings. Otherwise, relationships seemed indeterminate.

Comments made on the field success and/or adjustment of various testees were informally compared with test scores, and it was seen that in many cases test scores more or less clearly predicted these comments. Cut-off scores based on the intelligence test would have eliminated poorer missionaries reasonably well, but those based on other tests would have done more poorly.

V. CONCLUSIONS

The major conclusions growing out of this study may be listed as follows:

1. Candidate secretaries' ratings, presumably based upon interviews, references, and other papers failed to prove their validity. As a matter of fact, in this particular study they were worse than worthless because they were definitely on the wrong side of chance scores. This conclusion, however, is based on a small number of cases and is to be received with extreme caution.

2. Tests of vocational and religious interest seemed to have a real contribution to make in missionary personnel selection and seemed to apply almost equally well to persons of either sex.

3. Tests of intelligence and of social attitudes seemed to offer help primarily in the selection of women. This conclusion, too, is to be received with some caution, not only because of the small numbers involved but because of the lower and more variable scores of women within this study.

4. Tests of neurotic tendency seemed to be very valuable (in reverse) in the selection of men. Highly neurotic men seemed to have small chance of field success. With women the picture was not so clear, although high neuroticism even among women was regarded as raising serious doubt.


5. Multiphasic personality tests measuring dominance and self-sufficiency (as well as neurotic tendency) seemed quite valuable in the selection of males, but of lesser or no value in the selection of women.

6. A battery of tests including a test of intelligence, of vocational and/or religious interest, and of neurotic tendency correlated over .50 with field success. It is to be presumed that in larger groups this figure would hold good, particularly if the sex differences noted above were held in mind. In fact, even higher correlations might be found. This figure makes it reasonably clear that missions boards could sharpen their selection procedures considerably by adding psychological testing to present procedures.

The inherent weakness of this study has been its lack of large numbers. Though this was a necessary consequence of delimiting the study to the Hartford testees, of whom unfortunately there were too few; and although, further, no study can ever deal with relatively large numbers because missionaries are not that numerous, it becomes evident that additional studies such as this are called for if the psychological testing of missionaries is to be placed upon a solid foundation.

VITA

Clarence Richmond Thayer was born in Pittsburgh, Pennsylvania, June 11, 1901. He is a graduate of the Linden Public School, Peabody High School, University of Pittsburgh, and Western Theological Seminary, all of Pittsburgh. He also holds the M.Th. degree from the Pittsburgh-Xenia Theological Seminary of the same city. He has had four years' teaching experience and 24 years in the active pastorate. He is now serving a federated charge at New Florence, Pennsylvania.



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